

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Billy G. Moon  
Serial No.: 09/864,750  
Filing Date: May 24, 2001  
Confirmation No.: 1922  
Group Art Unit: 2153  
Examiner: Yasin M. Barqadle  
Title: METHOD AND APPARATUS FOR REGISTERING A  
MOBILE OBJECT ON A FOREIGN NETWORK

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

REPLY BRIEF

Applicant has appealed to the Board of Patent Appeals and Interferences from the Final Action of the Examiner issued February 15, 2006 finally rejecting Claims 1-38. In response to the Examiner's Answer issued October 9, 2007, Applicant respectfully submits herewith its brief in reply.

REAL PARTY IN INTEREST

The present Application was assigned to Cisco Technology, Inc., a California corporation, as indicated by an Assignment from the inventor recorded on May 24, 2001 in the Assignment Records of the United States Patent and Trademark Office at Reel 011856, Frames 0563-0565.

RELATED APPEALS AND INTERFERENCES

There are no known appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

STATUS OF CLAIMS

Claims 1-38 stand rejected pursuant to a Final Action issued February 15, 2006. Claims 1-38 are all presented for appeal.

STATUS OF AMENDMENTS

A Response to Examiner's Action was filed on October 18, 2004 in response to an Office Action issued July 16, 2004. Claims 1, 12, 17, 26, and 36 were amended. A Response to Examiner's Final Action was filed on May 31, 2005 in response to a Final Action issued March 28, 2005. No further amendments were made to the claims. A Response to Examiner's Action was filed on October 3, 2005 in response to an Office Action issued July 1, 2005. Claims 1, 12, 17, 26, and 36 were amended. A Response to Examiner's Final Action was filed on April 16, 2006 in response to a Final Action issued February 15, 2006. No further amendments were made to the claims. A Notice of Appeal and Request for Pre-Appeal Brief Review were filed on June 14, 2006 in response to an Advisory Action issued May 10, 2006. A Notice of Panel Decision from Pre-Appeal Brief Review issued on May 29, 2007 stating that the appeal is to proceed to the Board of Patent Appeals and Interferences.

SUMMARY OF CLAIMED SUBJECT MATTER

With respect to Independent Claim 1, a method for registering a mobile object 104 with a foreign network 14 is provided. (See FIGs. 1, 6, 7, and 11 and page 34, lines 29-30). The method includes moving a mobile object 104 from a home network 16 to a foreign network 14 in response to unavailable resources at the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The mobile object 104 is computer language code operable to be executed by or executed on the home 16 or foreign 14 networks. (See FIGs. 1, 6, 7, and 11 and page 9, line 21, to page 10, line 2). The mobile object 104 is executed on a first virtual machine 38e at a first router 18 on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). A care-of-name 122 for the mobile object 104 is generated at a foreign object agent 102 located on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). The care-of-name 122 is communicated to a home object agent 100 located on the home network 16. (See FIGs. 1, 6, 7 and 11 and page 10, lines 28-31). A mobility binding for the mobile object 104 is generated at the home object agent 100 where the mobility binding includes the care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, line 31, to page 11, line 3).

With respect to Independent Claim 12, a method for registering a mobile object 104 with a foreign network 14 is provided. (See FIGs. 1, 6, 7, and 11 and page 34, lines 29-30). The method includes moving a mobile object 104 from a home network 16 to a foreign network 14 in response to unavailable resources at the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The mobile object 104 is computer language code operable to be executed by or executed on the home 16 or foreign 14 networks. (See FIGs. 1,

6, 7, and 11 and page 9, line 21, to page 10, line 2). The mobile object 104 is executed on a virtual machine 38e at a router 20 on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). A care-of-name 122 for the mobile object 104 is generated at a foreign object agent 102 located on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 34, lines 25-28). The care-of-name 122 is communicated to a home object agent 100 located on the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 28-31). A mobility binding for the mobile object 104 is generated at the home object agent 100 where the mobility binding includes the care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, line 31, to page 11, line 3). The mobile object 104 is located on the foreign network 14 by using the care-of-name 122 associated with the mobility binding. (See FIGs. 1, 6, 7, and 11 and page 25, lines 24-28).

With respect to Independent Claim 17, a router 18 comprising a virtual machine 38e configured to host a mobile object 104 is provided. (See FIGs. 1, 2, 6, 7, and 11 and page 12, lines 4-21). The mobile object 104 is operable to move from a home network 16 to a foreign network 14 in response to unavailable resources at the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The mobile object 104 negotiates with a foreign object agent 102 located on the foreign network 14 for a care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). The mobile object 104 obtains a mobility binding from a home object agent 100 located on the home network 16 by using the care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, line 31, to page 11, line 3). The mobile object 104 is computer language code operable to be executed by or executed

on the home 16 or foreign 14 networks. (See FIGs. 1, 6, 7, and 11 and page 9, line 21, to page 10, line 2).

With respect to Independent Claim 26, logic encoded in media for registering a mobile object 104 with a foreign network 14 is provided. (See FIGs. 1, 6, 7 and 11 and page 9, lines 17-21). The logic is operable to move a mobile object 104 from a home network 16 to a foreign network 14 in response to unavailable resources at the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The mobile object 104 is computer language code operable to be executed by or executed on the home 16 or foreign 14 networks. (See FIGs. 1, 6, 7, and 11 and page 9, line 21, to page 10, line 2). The mobile object 104 is executed by the logic on a first virtual machine 38e at a first router 20 on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). A care-of-name 122 for the mobile object 104 is generated at a foreign object agent 102 located on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). The care-of-name 122 is sent to a home object agent 100 located on the home network 16. (See FIGs. 1, 6, 7 and 11 and page 10, lines 28-31). A mobility binding for the mobile object 104 is generated at the home object agent 100 where the mobility binding includes the care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, line 31, to page 11, line 3).

With respect to Independent Claim 36, an apparatus 10 for registering a mobile object 104 with a foreign network 14 is provided. The apparatus 10 includes means for moving a mobile object 104 from a home network 16 to a foreign network 14 in response to unavailable resources at the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The mobile object 104 is computer language code operable to be executed by or executed on the home 16 or foreign 14 networks.

(See FIGs. 1, 6, 7, and 11 and page 9, line 21, to page 10, line 2). The apparatus 10 includes means for executing the mobile object 104 on a virtual machine 38e at a router 20 on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 19-25). The apparatus 10 includes means for generating a care-of-name 122 for the mobile object 104 at a foreign object agent 102 located on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 10, lines 25-28). The apparatus 10 includes means for communicating the care-of-name 122 to a home object agent 100 located on the home network 16. (See FIGs. 1, 6, 7, and 11 and page 10, lines 28-31). The apparatus 10 includes means for generating a mobility binding at the home object agent 100 for the mobile object 104, the mobility binding including the care-of-name 122. (See FIGs. 1, 6, 7, and 11 and page 10, line 31, to page 11, line 3).

With respect to Dependent Claim 37, the care-of-name 122 comprises an object name associated with the mobile object 104 and an extension name that uniquely identifies the mobile object 104 on the foreign network 14. (See FIGs. 1, 6, 7, and 11 and page 29, lines 13-17).

With respect to Dependent Claim 38, the apparatus 10 also includes means for locating the mobile object 104 on the foreign network 14 by using the care-of-name 122 associated with the mobility binding. (See FIGs. 1, 6, 7, and 11 and page 25, lines 24-28).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,738,362 issued to Xu, et al. in view of U.S. Patent No. 6,463,286 issued to Salminen and further in view of U.S. Patent No. 6,496,871 issued to Jagannathan, et al.



ARGUMENT

1. Claims 1-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,738,362 issued to Xu, et al. in view of U.S. Patent No. 6,463,286 issued to Salminen and further in view of U.S. Patent No. 6,496,871 issued to Jagannathan, et al. According to M.P.E.P. §2143, to establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation to combine the references. Second, there must be a reasonable expectation of success. Third, the prior art combination of references must teach or suggest all the claim limitations. The Examiner has not established that any criteria for a prima facie case of obviousness has been met in this instance.

First, there is no objective reason provided by the Examiner to combine the Xu, et al., Salminen, and Jagannathan, et al. patents as proposed. The Examiner has failed to provide an objective reason that would have prompted a person of ordinary skill in the art to combine the Xu, et al., Salminen, and Jagannathan, et al. patents. The Xu, et al. patent is directed to a mobile wireless device that can communicate with its home network remotely through a foreign network. The Salminen patent is directed to mobile wireless station roaming from one area to another area. The Jagannathan, et al. patent is directed to distributed agent software system in a computer network. Thus, the three cited patents apply to different areas of technology. The Examiner has not cited any objective reason showing any capability for them to be combined. The Examiner merely states that one of ordinary skill in the art would be motivated to provide the feature of the claimed invention, presumably taught by the Jagannathan, et al. patent, and the feature of the Salminen

patent in the Xu, et al. patent. The rationale provided by the Examiner for their combination is purely subjective conjecture and speculation with no objective reasoning being provided to support combining the references as has been proposed. The Examiner is merely taking bits and pieces of unrelated subject matter in an improper hindsight attempt at reconstructing the claimed invention.

The Examiner merely provides a baseless and subjective conclusory "it would have been obvious to combine" statement using improper hindsight reconstruction without any support for such conclusory statements from the point of view of those skilled in the art. A statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. See M.P.E.P. 2143.01. Since the Examiner has used the claim language in a hindsight attempt to support the combination of the references and has not provided any proper reasoning, let alone objective reasoning for the combination of the Xu, et al., Salminen, and Jagannathan, et al. patents, the burden to establish the first criteria of a prima facie case of obviousness has not been met.

Moreover, the proposed modification changes the principle of operation of the prior art being modified. The Xu, et al. patent is designed to allow a wireless mobile device to communicate with its home network when in the coverage area of a foreign network. The Salminen patent is designed to allow a mobile device to roam from one network to another and maintain

operability. the Jagannathan, et al. patent is designed allow a mobile object to migrate between two computer machines that are included in the protection domain of an agent. Thus, if the mobile object migration between two computer machines covered by a protection domain of the Jagannathan, et al. patent and the roaming operability of the Salminen patent were placed into the system allowing a mobile device to communicate remotely, the functionality of the Xu, et al. patent could no longer be achieved. Accordingly, the principle of operation of the Xu, et al. patent would be improperly changed by incorporating the respective teachings of the cited patents. The Examiner has yet to explain how the Xu, et al., Salminen, and Jagannathan, et al. patents can be combined in view of such different functionalities. The Examiner states that it would be obvious or clear to one of ordinary skill in the art to combine the references. However, this subjective opinion provided by the Examiner has not been supported by any objective evidence.

The Examiner indicates that the Xu, et al. patent discloses a mobile object, being executable computer language code, being moved from a home network to a foreign network for execution in response to unavailable resources at the home network. The Examiner is equating a wireless mobile node of the Xu, et al. patent to the claimed executable mobile object. However, the wireless mobile node of the Xu, et al. patent is not analogous to an executable mobile object. The Xu, et al. patent is directed to a registering of a wireless mobile node in a telecommunication network. Similarly, the Salminen patent is directed to roaming of a wireless device in a mobile radio communication system. These references are hardly in the field of remote mobile object execution techniques and are not remotely related to the problem of executing a mobile

object in a computer system when resources are not available at the home computing network of the mobile object. The wireless mobile devices of the Xu, et al. and Salminen patents would never be seen by those skilled in the art as mobile objects in a computer network nor similar to the agents and objects of the Jagannathan, et al. patent. Therefore, Applicant respectfully submits that the Examiner has failed to establish the first criteria for a prima facie case of obviousness.

In the Examiner's Answer, Examiner states that the three cited patents apply to similar areas of technology such as the field of computing devices in a computer network. Each of the cited patents may mention the term computer but they are not in similar areas of technology. The Xu, et al. patent is directed to a telecommunications network to allow a mobile communications device to communicate with a host computer on an IP network. The Salminen patent is directed to mobile station communications in a mobile radio communication system. The Jagannathan, et al. patent is directed to a distributed software system for use with a plurality of fixed computer machines connected as a network where an agent may have its objects move among various computer machines so that tasks and state distributed among multiple potentially heterogeneous physical machines within the network. Thus, the Jagannathan, et al. patent is associated with agent and object mobility between computer machines while the Xu, et al. and Salminen patents are directed to mobile devices and their communication capabilities when moving within a telecommunications or radio communications network. Accordingly, the Jagannathan, et al. patent is not pertinent to the problem of providing communications for a device moving within a telecommunications or radio communication network as addressed in the Xu, et al

and Salminen patents. Likewise, the Xu, et al. and Salminen patents are not pertinent to agent and object mobility between computing machines as addressed in the Jagannathan, et al. patent. In addition, the home tunneling agents of the Xu, et al. patent are not the same as the mobile agents/objects of the Jagannathan, et al. patent as asserted by the Examiner. The home tunneling agents of the Xu, et al. patent are clearly disclosed therein as being multiple instantiations all independently implemented on a single router, switch, computer, or other device to facilitate communications for a mobile device traversing within a telecommunications network. On the other hand, the agent/object of the Jagannathan, et al. patent can move from one computer to another. Thus, the cited patents are in different fields of technology, solve completely different problems, and would not be even remotely considered in combination by a person of skill in the art associated with any of the cited patents.

Second, a reasonable expectation of success has not been shown by the Examiner. The combination of the Xu, et al., Salminen, and Jagannathan, et al. patents would not be capable of performing the operation required by the claimed invention. There is no showing by the Examiner that the functions of any of the Xu, et al., Salminen, and Jagannathan, et al. patents would be able to operate in a single system. There has also been no showing that the combined references would even be able to perform the functionality of the claimed invention. The proposed combination attempts to combine incompatible processing techniques that have not been shown to be capable of operating according to any degree of predictability. The Xu, et al., Salminen, and Jagannathan, et al. patents are addressing different problems. The Xu, et al. patent of providing home access for a mobile device in a foreign network

provides a completely different operation than the mobile device roaming of the Salminen patent and is even more diverse from the capability provided by the Jagannathan, et al. patent. The Examiner, without the improper hindsight look through the claimed invention, has not addressed how the proposed combination of the cited references would have any success whatsoever let alone a reasonable expectation of success. Therefore, Applicant respectfully submits that the Examiner has failed to establish the second criteria for a prima facie case of obviousness.

In the Examiner's Answer, the Examiner states that the proposed Xu, et al. - Salminen combination would need the mobility of the software agents provided by the Jagannathan, et al. patent. The Examiner expressly states that combining the Xu, et al. and Salminen patents provides network access for roaming users. The Examiner has not shown how facilitating communications for roaming users provided in the Xu, et al. and Salminen patents is related in any manner to the software agent mobility provided by the Jagannathan, et al. patent. In addition, the ability to facilitate communications for a mobile device roaming within a telecommunications network as provided in the Xu, et al. and Salminen patent do not require any agent mobility to operate as intended. In fact, the operation of the Xu, et al. and Salminen patents would be severely compromised if the tunneling function was not maintained at a routing device. Not only would the telecommunication system of the Xu, et al. and Salminen patents have to keep track of where the mobile device is located, it would also be necessary to keep track of where the tunneling function is located if implemented as a mobile software agent disclosed in the Jagannathan, et al. patent. There has been no showing by the Examiner that such a

functionality could work let alone provide a reasonable expectation of success. As a result, the proposed combination of the Xu, et al., Salminen, and Jagannathan, et al. patents has not been shown to satisfy the reasonable expectation of success prong to support an obviousness rejection.

Third, the Examiner has not shown that the proposed Xu, et al. - Salminen - Jagannathan, et al. combination teaches or suggests all of the claim limitations. Independent Claims 1, 12, 17, 26, and 36 recite in general the ability to move a mobile object from a home network to a foreign network in response to unavailable resources at the home network and execute the mobile object on a first virtual machine at a first router on the foreign network, where the mobile object is computer language code operable to be executed by or executed on the home or foreign network. By contrast, the Xu, et al. patent merely provides a capability for a mobile wireless device to communicate with its home network remotely through a foreign network. There is no mention of an object having computer language code in the Xu, et al. patent let alone its mobility from a home network to a foreign network. Moreover, there is no disclosure in the Xu, et al. patent that this object mobility is triggered by a lack of resources in the home network. In addition, there is no disclosure in the Xu, et al. patent of execution of a mobile object once moved to the foreign network. The Examiner seems to equate the mobile node of the Xu, et al. patent with the claimed mobile object. However, the mobile node of the Xu, et al. patent is a wireless device, such as a laptop computer or PDA, that can communicate data with a target host despite not being in its home network. Data communications in the Xu, et al. patent are facilitated through routers associated with the laptop computer's home network and the foreign network where the

laptop currently resides. The mobile wireless node of the Xu, et al. patent is not remotely equivalent to the mobile object of the claimed invention, which is software code capable of being executed to perform a function. The Examiner also uses the Salminen patent in combination with the Xu, et al. patent. However, the Salminen patent is similarly related to mobile wireless stations roaming from one area to another with no disclosure concerning objects in computer language code or their mobility as provided in the claimed invention.

The Examiner attempts to overcome the deficiencies of the Xu, et al. and Salminen patents by citing the Jagannathan, et al. patent in a proposed combination therewith. However, the Jagannathan, et al. patent is directed to a distributed agent software system in a computer network. As a result, the Xu, et al. and Salminen patents and their ability to respond to a physical mobile wireless device roaming between telecommunications networks are not remotely related to object mobility in a computer network as provided in the Jagannathan, et al. patent. The Examiner is attempting to combine patents in separate fields of technology and in separate technical environments that are solving completely different problems in their respective area of technology. A person of skill in the art would hardly consider the mobile wireless devices in the telecommunications networks of the Xu, et al. and Salminen patents in relation to the mobile objects of the claimed invention executing a desired service let alone consider the Jagannathan, et al. patent and its movable objects with the mobile wireless devices of the Xu, et al. and Salminen patents.

For arguments sake, even if the cited patents could be combined for some reason, they would still lack an ability to move a mobile object in response to unavailable resources at



the home network and execute the mobile object at the foreign network as required in the claimed invention. The Examiner readily admits that such a feature is lacking from the Xu, et al. patent. The Examiner states that this feature is disclosed in the Salminen patent. However, the Salminen patent discloses that a mobile device can operate through a visited network when an overload condition exists in the home network. There is no movement of a mobile object from a home network to a foreign network disclosed within the Salminen patent. The mobile device of the Salminen patent is merely allowed to register in place with the visited network. No movement of the mobile device takes place in the Salminen patent. Therefore, Applicant respectfully submits that Claims 1-38 are patentably distinct from the proposed Xu, et al. - Salminen - Jagannathan, et al. combination.

In the Examiner's Answer, the Examiner asserts that the cited patents are being attacked individually. However, Applicant is merely pointing out the deficiencies in the cited patents and the disclosures therein relied on by the Examiner in supporting the rejections to the claims. For example, the Examiner relies on the Xu, et al. patent in the Examiner's Answer to support object mobility. The Xu, et al. patent discloses a mobile device physically moving within a telecommunications network but no object mobility between computers. The Examiner's reliance on the Salminen patent is also misplaced. The Salminen patent discloses the capability for a visiting network to grant access to a number of mobile stations of the home network. However, such operation of the Salminen patent has no relationship whatsoever to moving a mobile object from a home network to a foreign network as provided in the claimed invention. A mobile station of the Salminen patent roaming within a radio communication network

is not the same as a mobile object of the claimed invention. The Examiner is trying to equate two terms having completely different meaning, structure, and operation to support the rejections to the claims. As a result, the Examiner has failed to show that each and every limitation of the claimed invention is disclosed in the proposed combination.

Thus, the Examiner has failed to establish the third criteria for a prima facie case of obviousness. As a result of the improper combination of the references, the lack of any expectation of success for the combination, and the lack of disclosure in the patents being combined by the Examiner, there is an insufficient basis to support the rejection of the claims.

CONCLUSION

Applicant has clearly demonstrated that the present invention as claimed is clearly distinguishable over all the art cited of record, either alone or in combination, and satisfies all requirements under 35 U.S.C. §§101, 102, and 103, and 112. Therefore, Applicant respectfully requests the Board of Patent Appeals and Interferences to reverse the final rejection of the Examiner and instruct the Examiner to issue a Notice of Allowance of all pending claims.

The Commissioner is hereby authorized to charge any fees or credit any overpayments associated with this Application to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P.

Respectfully submitted,

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December 10, 2007

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CLAIMS APPENDIX

1. (Previously Presented) A method for registering a mobile object with a foreign network, comprising:

moving a mobile object from a home network to a foreign network in response to unavailable resources at the home network, the mobile object being computer language code operable to be executed by or executed on the home or foreign networks;

executing the mobile object on a first virtual machine at a first router on the foreign network;

generating a care-of-name for the mobile object at a foreign object agent located on the foreign network;

communicating the care-of-name to a home object agent located on the home network; and

generating a mobility binding for the mobile object at the home object agent, the mobility binding including the care-of-name.

2. (Original) The method of Claim 1, further comprising providing an object name associated with the mobile object to the foreign object agent to create the care-of-name.

3. (Original) The method of Claim 1, wherein the care-of-name comprises an object name associated with the mobile object and an extension name to uniquely identify the mobile object on the foreign network.

4. (Original) The method of Claim 1, further comprising the home object agent operable to maintain network location information for the mobile object.

5. (Original) The method of Claim 1, further comprising:

discovering the foreign object agent on the foreign network; and

receiving an address associated with the foreign object agent at the mobile object.

6. (Original) The method of Claim 1, further comprising locating the mobile object on the foreign network by using the care-of-name associated with the mobility binding.

7. (Original) The method of Claim 1, further comprising determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object.

8. (Original) The method of Claim 1, further comprising:

determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object; and

providing authorization for the foreign object agent to communicate with the home object agent based on agent credentials associated with the foreign object agent if the mobile object is authorized to negotiate with the foreign object agent.

9. (Original) The method of Claim 1, further comprising:

determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object;

providing authorization for the foreign object agent to communicate with the home object agent based on agent credentials associated with the foreign object agent if the mobile object is authorized to negotiate with the foreign object agent; and

authenticating the object credentials at the home object agent to create the mobility binding for the mobile object if the foreign object agent receives authorization to communicate with the home object agent.

10. (Original) The method of Claim 1, further comprising:

copying the mobile object to create a duplicate mobile object on a second virtual machine at a second router located on the foreign network; and

creating a duplicate mobility binding at the home agent for the duplicate mobile object by obtaining a duplicate care-of-name from the foreign object agent.

11. (Original) The method of Claim 1, further comprising:

moving a portion of the mobile object to a second virtual machine at a second router located on the foreign network; and

creating a secondary mobility binding at the first router for the portion of the mobile object by obtaining a secondary care-of-name from the foreign object agent.

12. (Previously Presented) A method for registering a mobile object with a foreign network, comprising:

moving a mobile object from a home network to a foreign network in response to unavailable resources at the home network, the mobile object being computer language code operable to be executed by or executed on the home or foreign networks;

executing the mobile object on a virtual machine at a router on the foreign network;

generating a care-of-name for the mobile object at a foreign object agent located on the foreign network;

communicating the care-of-name to a home object agent located on the home network;

generating a mobility binding for the mobile object at the home object agent, the mobility binding including the care-of-name; and

locating the mobile object on the foreign network by using the care-of-name associated with the mobility binding.

13. (Original) The method of Claim 12, wherein the care-of-name comprises an object name associated with the mobile object and an extension name to uniquely identify the mobile object on the foreign network.

14. (Original) The method of Claim 12, further comprising:

generating a care-of-address associated with the care-of-name for the mobile object at the foreign object agent; and

establishing a tunnel between the home object agent and the mobile object by using the care-of-address as an endpoint of the tunnel.

15. (Original) The method of Claim 14, wherein the care-of-address comprises an Internet Protocol address.

16. (Original) The method of Claim 12, further comprising the home object agent operable to maintain network location information for the mobile object.

17. (Previously Presented) A router comprising a virtual machine configured to host a mobile object, the mobile object operable to:

move from a home network to a foreign network in response to unavailable resources at the home network;

negotiate with a foreign object agent located on the foreign network for a care-of-name; and

obtain a mobility binding from a home object agent located on the home network by using the care-of-name;

wherein the mobile object is computer language code operable to be executed by or executed on the home or foreign networks.

18. (Original) The router of Claim 17, further comprising the mobile object operable to provide an object name associated with the mobile object to the foreign object agent.

19. (Original) The router of Claim 17, wherein the care-of-name comprises an object name associated with the mobile object and an extension name that uniquely identifies the mobile object on the foreign network.



20. (Original) The router of Claim 17, further comprising the home object agent operable to:

host the mobile object on the home network; and  
maintain network location information for the mobile object.

21. (Original) The router of Claim 17, further comprising the mobile object operable to:

discover the foreign object agent on the foreign network through an agent solicitation message; and

receive an address associated with the foreign object agent.

22. The router of Claim 17, further comprising an agent virtual machine configured to host the foreign object agent.

23. (Original) The router of Claim 17, further comprising the mobile object operable to:

create a duplicate mobile object operable to be hosted on a duplicate virtual machine at a duplicate router on the foreign network; and

obtain a duplicate mobility binding from the home object agent by receiving a duplicate care-of-name from the foreign object agent.

24. (Original) The router of Claim 17, further comprising the mobile object operable to:

move a portion of the mobile object to a duplicate virtual machine at a duplicate router on the foreign network; and

obtain a secondary mobility binding at the router for the portion of the mobile object by obtaining a secondary care-of-name from the foreign object agent.

25. (Original) The router of Claim 17, further comprising:

the mobile object operable to send object credentials to the foreign object agent to obtain authorization to negotiate with the foreign object agent; and

the mobile object obtaining the mobility binding if the home object agent provides authorization for the foreign object agent to communicate with the home object agent and authenticates object credentials associated with the mobile object.

26. (Previously Presented) Logic encoded in media for registering a mobile object with a foreign network, the logic operable to perform the following steps:

move a mobile object from a home network to a foreign network in response to unavailable resources at the home network, the mobile object being computer language code operable to be executed by or executed on the home or foreign networks;

executing the mobile object on a first virtual machine at a first router on the foreign network;

generating a care-of-name for the mobile object at a foreign object agent located on the foreign network;

sending the care-of-name to a home object agent located on the home network; and

generating a mobility binding for the mobile object at the home object agent, the mobility binding including the care-of-name.

27. (Original) The logic of Claim 26, further comprising providing an object name associated with the mobile object to the foreign object agent to create the care-of-name.

28. (Original) The logic of Claim 26, wherein the care-of-name comprises an object name associated with the mobile object and an extension name that uniquely identify the mobile object on the foreign network.

29. (Original) The logic of Claim 26, further comprising the home object agent operable to maintain network location information for the mobile object.

30. (Original) The logic of Claim 26, further comprising:

discovering the foreign object agent on the foreign network; and

receiving an address associated with the foreign object agent at the mobile object.

31. (Original) The logic of Claim 26, further comprising determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object.

32. (Original) The logic of Claim 26, further comprising:

determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object; and

providing authorization for the foreign object agent to communicate with the home object agent based on agent credentials associated with the foreign object agent if the mobile object is authorized to negotiate with the foreign object agent.

33. (Original) The logic of Claim 26, further comprising:

determining if the mobile object is authorized to negotiate with the foreign object agent based on object credentials associated with the mobile object;

providing authorization for the foreign object agent to communicate with the home object agent based on agent credentials associated with the foreign object agent if the mobile object is authorized to negotiate with the foreign object agent; and

authenticating the object credentials at the home object agent to create the mobility binding for the mobile object if the foreign object agent receives authorization to communicate with the home object agent.

34. (Original) The logic of Claim 26, further comprising:

copying the mobile object to create a duplicate mobile object on a second virtual machine at a second router located on the foreign network; and

creating a duplicate mobility binding at the home agent for the duplicate mobile object by obtaining a duplicate care-of-name from the foreign object agent.

35. (Original) The logic of Claim 26, further comprising:

moving a portion of the mobile object to a second virtual machine at a second router located on the foreign network; and

creating a secondary mobility binding at the first router for the portion of the mobile object by obtaining a secondary care-of-name from the foreign object agent.

36. (Previously Presented) An apparatus for registering a mobile object with a foreign network, comprising:

means for moving a mobile object from a home network to a foreign network in response to unavailable resources at the home network, the mobile object being computer language code operable to be executed by or executed on the home or foreign networks;

means for executing the mobile object on a virtual machine at a router on the foreign network;

means for generating a care-of-name for the mobile object at a foreign object agent located on the foreign network;

means for communicating the care-of-name to a home object agent located on the home network; and

means for generating a mobility binding at the home object agent for the mobile object, the mobility binding including the care-of-name.

37. (Original) The apparatus of Claim 36, wherein the care-of-name comprises an object name associated with the mobile object and an extension name that uniquely identifies the mobile object on the foreign network.

38. (Original) The apparatus of Claim 36, further comprising means for locating the mobile object on the foreign network by using the care-of-name associated with the mobility binding.

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EVIDENCE APPENDIX

None

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RELATED PROCEEDINGS APPENDIX

None



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CERTIFICATE OF SERVICE

None